

XVII. *Observations on the Genus Hosackia and the American Loti.*By GEORGE BENTHAM, *Esq.*, *F.L.S.*

Read February 3rd, 1835.

IN describing the *Hosackia bicolor* for the Botanical Register (vol. xv. tab. 1257), I relied chiefly as a generic character on the pinnate leaves, and the absence of the large foliaceous stipulæ so prominent in *Lotus*, the genus from which *Hosackia* was separated, and to which it appears nearest allied; and I added to the abovementioned species three other North American plants, which in this respect appeared to belong to *Hosackia* rather than to *Lotus*. This view of the genus has since been taken up by Dr. Hooker in his *Flora Boreali-Americana* and other works, although evidently with doubt as to some of the species. Upon a reexamination of the same and other species contained in the Horticultural Society's Californian collections or in my own herbarium, I am now induced to confine the circumscription of *Hosackia* to the umbellate species, and propose to consider the uniflorous ones as belonging to *Lotus*, of which they would form a separate section, which, with reference to the size of the flowers, might be called *Microlotus*. The two genera would then be characterized by the form of the flower; and the peculiarities observable in the organs of vegetation would again be reduced to their proper level, that of *subsidiary* not *essential* characters.

In the true *Hosackiæ* the claw of the vexillum is always at some distance from those of the other petals; the alæ adhere by their margins to the carina, and usually (if not always) spread at right angles from it; the carina is usually less rostrate than in *Lotus*, and the stigma more distinctly capitate. The latter character, however, is of little importance, being but one of degree; for all *Loti* have in fact a capitate stigma, in some species very visible to the naked eye, especially when examined young; in others so small that the style appears pointed without a very close examination. The stipulæ in *Hosackia*

are always at the base of the leaves, in some species small and scariosæ, in one large and foliaceous, but formed more like those of the *Vicieæ* than of *Lotus*, and in all the species of the second division, as described below, so minute as to appear like a little black spot, and even that is observable only on the younger leaves of some species.

In *Microlotus* the flower does not present any essential differences from that of our European *Loti*. The leaves appear at first sight to be irregularly pinnate with from three to five (and never more) leaflets, without any trace of stipules; but if it be considered that the lowest of the leaflets often occupies the place of a stipule, and that the two lowest (where there are more than three) are never opposite to each other, the opinion is suggested that the two lowest leaflets where there are five, or one or two where there are four, are in fact of the same nature as the foliaceous stipules of the European *Loti*, only as it were petiolate, with their petioles adhering to the common petiole of the leaf. This explanation is not indeed strictly compatible with the structure of the leaf of *Lotus subpinnatus*, as figured in Hooker and Arnott's Botany of Captain Beechey's Voyage, tab. 8.; but in my specimens I do not find the petiole to be concave, and the two lower leaflets both proceed from the upper side or (with reference to a horizontal plane) from the *middle line* of the petiole, and at the base of the petiole the bundles of vessels proceeding from these leaflets appear to lie one on each side of that middle line. This point, however, is difficult to determine upon dried specimens, where the apparently unilateral direction of the leaflets is very remarkable.

I now proceed to resume the character of *Hosackia* according to the above view, adding a synopsis of all the species of *Hosackia* and *Microlotus* I am acquainted with.

HOSACKIA. Dougl. Benth. in Bot. Reg. sub t. 1257.

Calyx tubulosus vel subcampanulatus, 5-dentatus. *Vexilli* unguis à cæteris distans. *Alæ* vexillum subæquantes, patentés. *Carina* submutica. *Stylus* subrectus. *Stigma* capitatum. *Legumen* cylindraceum, apterum.
Herbæ Boreali-Americanæ, perennes?. *Folia* impari-pinnata. *Stipulæ* scariosæ, minutissimæ vel foliolis difformes. *Pedunculi* axillares, umbellatim pluriflori, folio florali sæpiùs stipati.

§ 1. *Stipulæ foliaceæ vel scariosæ.*

1. *H. BICOLOR* (*Dougl.*), stipulis scariosis, pedunculis ebracteatis, dentibus calycinis brevissimis. *Bot. Reg. t. 1257.*
Lotus pinnatus. Hook. Bot. Mag. t. 2913.
 Columbia river. *Douglas.*

2. *H. CRASSIFOLIA*, stipulis scariosis, pedunculis infra umbellam folio trifoliolato bracteatis, dentibus calycinis brevissimis.
 Size and habit of *H. bicolor*. Leaflets broad, obovate, somewhat fleshy. Flowers blue? or purple?, rather smaller than in *H. bicolor*.
 California. *Douglas.*

3. *H. STIPULARIS*, stipulis foliaceis latè semisagittatis, pedunculis infra umbellam folio trifoliolato bracteatis, dentibus calycinis tubo brevioribus.
 Size and habit of *H. bicolor*. Stems and petioles hairy.
 California. *Douglas.*

4. *H. GRACILIS*, glaberrima, foliolis inferioribus latè obovatis, stipulis amplis membranaceis, pedunculis apice folio trifoliolato bracteatis, calycibus subbilabiatis tubo dimidio brevioribus.
 A much slenderer and smaller plant than *H. bicolor*, to which it has in other respects much resemblance. Flowers rather smaller, more slender, with longer alæ.

California. *Douglas.*

5. *H. MEXICANA*, subcanescens, foliolis omnibus oblongis linearibusve, stipulis parvis scariosis, pedunculis 1—2-floris apice folio trifoliolato bracteatis, dentibus calycinis subulatis tubo brevioribus.

A slender plant like the last. Flowers smaller, with the alæ and vexillum broader, but in other respects those of a true *Hosackia*.

Communicated by G. J. Graham, Esq., who gathered it during his visit to the mining district of Tlalpujahua.

§ 2. *Stipulae minutæ nigrescentes, sæpè deciduæ.*

6. *H. GRANDIFLORA*, apice levitèr pubescens, foliis sub-7-foliolatis, pedunculis elongatis apice foliolo unico sessili bracteatis, dentibus calycinis tubo vix brevioribus.

Size and habit of *H. bicolor*. Young leaves and calyces pubescent. Stipules only observable in the very young leaves. Flowers larger than in *H. bicolor*, but the footstalks of the petioles are less distant than in the other species.

California. *Douglas*.

7. *H. DECUMBENS*, adpressè pubescens, foliis 4—5-foliolatis, pedunculis folio subbrevioribus multifloris apice folio subtrifoliolato bracteatis, dentibus calycinis tubum æquantibus. *Benth. in Bot. Reg. sub t. 1257. Hooker, Fl. Bor. Amer. t. 134.*

Alæ but slightly adherent.

Columbia river. *Douglas*.

8. *H. TOMENTOSA* (*Hook. & Arn. Bot. of Beech. Voy. 137 ?*), piloso-tomentosa, foliis 4—5-foliolatis, pedunculis brevissimis multifloris foliolo unico bracteatis, dentibus calycinis tubo brevioribus.

In the above-quoted work the bracts are described as similar to the leaves, which is not the case in the specimens before me; it is therefore doubtful whether it be in fact the same plant. The alæ in this and the two following species are as strongly adherent to the carina as in *H. crassifolia*, &c.

California. *Douglas*.

9. *H. CYTISOIDES*, decumbens glabra vel apice subsericea, ramis angulatis, foliis 3—5-foliolatis, pedunculis multifloris foliolo minimo bracteatis, dentibus calycinis subulato-aristatis recurvis.

Leaves small, thick, with very short petioles. Stipules small and black, but hard and persistent in the form of tubercles. Flowers purple?, rather smaller than in *H. decumbens*.

California. *Douglas*.

10. *H. JUNCEA*, glabra, ramis angulatis strictis, foliis remotis 3—5-foliolatis,

pedunculis brevissimis plurifloris subbracteatis, dentibus calycinis brevibus muticis.

Branches very numerous and nearly erect. Leaves of *H. cytisoides*, with which this species has considerable affinity.

California. *Douglas*.

11. *H. SERICEA*, densè sericeo-tomentosa, foliis subtrifoliolatis, pedunculis brevissimis 1—3-floris ebracteatis.

Near *H. cytisoides*, but very distinct. Leaves larger, nearly sessile. Flowers rather larger. Alæ slightly but constantly adherent.

California. *Douglas*.

LOTUS. *Linn. Ser. in DeCand. Prodr. 2.*

SECT. III. MICROLOTUS. *Pedunculi* uniflori. *Folia* 3—5-foliolata exstipulata (stipulæ foliaceæ petiolares à caule remotæ?).

Herbæ Americanæ annuæ. *Flores* parvi. *Corollæ* vix calycem excedentes.

1. *L. SUBPINNATUS* (*Lag. Gen. et Sp. Pl. 23.*) villosus, foliolis obovatis, pedunculis brevissimis ebracteatis, leguminibus villosis.

Lotus subpinnatus. *Hook. & Arn. Bot. of Beech. Voy. 17. t. 8.*

Anthyllis chilensis. *DeCand. Prodr. ii. 171.*

Chili. *Cuming, Bertero, &c.* California. *Douglas*.

Apparently a coast plant.

2. *L. MACRÆI*, subglaber, foliolis oblongis linearibusve, pedunculis brevissimis ebracteatis, leguminibus glabris.

Valparaiso (Chili). *Macrae*. Raised also in our gardens from seeds brought by Mr. Cuming.

3. *L. MICRANTHUS*, glaber, foliis sub-5-foliolatis, pedunculis elongatis apice bracteatis.

Hosackia parviflora. *Benth. in Bot. Reg. sub t. 1257. Hook. Fl. Bor. Amer. i. 134.*

Columbia river. *Douglas*. California. *Menzies. (Hooker.)*

4. *L. SERICEUS* (*Pursh, Fl. Amer. Sept.* ii. 489.), pubescens, foliis subtrifoliolatis, pedunculis elongatis apice bracteatis.

Trigonella americana. *Nutt. Gen.* ii. 120.

Hosackia Purshiana. *Benth. in Bot. Reg. sub t.* 1257.

Widely spread over North America from the North-west (*Douglas*), to the Rocky Mountains and South Carolina (*Torrey*).

5. *L. UNIFOLIOLATUS*, hirsutus, foliis unifoliolatis, pedunculis brevibus apice bracteatis.

Hosackia unifoliata. *Hook. Fl. Bor. Amer.* i. 135.

Columbia river. *Scouler.* (*Hooker.*)

I have not seen this plant; the above character is from Dr. Hooker's description.